

Does Financial Inclusion Enhance SME Performance? Exploring the Transformative Potential of Islamic Fintech in Malaysia

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DOI: <https://dx.doi.org/10.47772/IJRISS.2025.909000533>

Received: 12 September 2025; Accepted: 18 September 2025; Published: 16 October 2025

ABSTRACT

The research examines the impact of Islamic fintech solutions on the financial inclusion of small and medium-sized enterprises (SME). Five independent variables are considered as exogenous construct, namely Islamic Crowdfunding Platforms, Islamic Peer-to-Peer (P2P) Lending Platforms, Islamic Mobile Payment Solutions, Islamic Microfinance Platforms, and Islamic Digital Banking Services. The dependent variable is the Financial Inclusion Performance of SMEs, measured using a Financial Inclusion Index. A survey is distributed to 310 respondents, who represent a diverse range of business types and natures. The findings reveal a significant positive relationship between Islamic Crowdfunding Platforms and the Financial Inclusion Performance of SMEs. This suggests that ICPs have the potential to provide alternative financing options for SMEs, enhancing their access to financial services. Conversely, the study does not find a significant positive relationship between Islamic P2P Lending Platforms and SME financial inclusion, indicating the need for further investigation into the factors influencing the effectiveness of IPPs in facilitating financial inclusion. Additionally, the research identifies a significant positive relationship between Islamic Mobile Payment Solutions and the Financial Inclusion Performance of SMEs. IMPS are found to improve accessibility and convenience for SMEs in conducting digital transactions. Similarly, Islamic Microfinance Platforms demonstrate a significant positive impact on SME financial inclusion, empowering SMEs to access credit and savings facilities. However, no significant positive relationship is observed between Islamic Digital Banking Services and SME financial inclusion. This suggests the presence of additional factors or challenges that limit the effectiveness of IDBS in promoting financial inclusion for SMEs. These findings contribute to the existing literature on Islamic fintech solutions and financial inclusion, emphasizing the importance of context-specific considerations. Further research is recommended to explore the dynamics and intricacies of these relationships and investigate additional factors that influence the effectiveness of Islamic fintech solutions in driving SME financial inclusion.

Keywords: Financial Inclusion, Fintech Solutions, SME, Digitalization, Exploratory PLS-SEM.

INTRODUCTION

Financial inclusion in business has become the buzzword trends for accelerating economic growth and reducing poverty levels in society. The business core unit in economy, small and medium enterprises (SMEs) are highly significant in driving economic development, especially in developing economies. However, a large portion of SMEs still struggles with ineligibility for formal financial services, which hinders their growth and limits their contributions to economic progress. In this context, the emergence of Islamic fintech solutions (IFS) has surfaced as a promising approach, blending modern financial technology advancements with the principles of Islamic finance. This study aims to investigate the disruptive nature of IFS and evaluate its impact on SME financial inclusion using a Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. PLS-SEM facilitates a detailed examination of the interrelationships among constructs, offering insights into the complex dynamics that govern financial inclusion and the adoption of Islamic fintech solutions.

This study pursues two main goals. First, it seeks to pinpoint the specific features of Islamic Fintech Solutions (IFS) that can effectively broaden financial inclusion for small and medium enterprises (SMEs). Second, it aims to evaluate how these solutions influence the wider financial inclusion framework. By focusing on the distinct

elements of Islamic fintech such as Sharia-compliant financing models and tech-based platforms. The research explores potential pathways to address the hurdles SMEs face in accessing conventional financial services. Drawing on a thorough review of existing literature and robust empirical data, this work highlights the transformative power of IFS in advancing financial inclusion for SMEs.

Thus, the study pursues the following objectives:

1. To examine the impact of five Islamic fintech solutions—Islamic crowdfunding platforms, Islamic peer-to-peer lending, Islamic mobile payment solutions, Islamic microfinance platforms, and Islamic digital banking services on the financial inclusion performance of SMEs.
2. To identify which Islamic fintech solutions significantly enhance SME financial inclusion.
3. To provide empirical evidence using PLS-SEM that contributes to the body of knowledge on financial inclusion within an Islamic fintech context.

Background And Problems

Small and medium enterprises (SMEs) serve as the cornerstone of global economies due to their significant contributions to employment, innovation, and overall economic expansion (Rizca Amelia et al., 2022). Despite this crucial role, many SMEs struggle to access mainstream financial services, constraining their capacity to grow and remain competitive (Hakim Ghazali, 2018). Ensuring financial inclusion is key to overcoming these hurdles, as it provides SMEs with affordable credit, savings options, insurance, and other essential financial products (Markus & Rideg, 2020). With greater access to financial services, SMEs can invest in their operations, scale up, and tap into new growth opportunities.

In addition, financial inclusion nurtures entrepreneurship and innovation, enabling more individuals to launch their own businesses and advance economic development. It also strengthens the resilience of SMEs by equipping them to handle risks and weather financial shocks (Muhammed et al., 2019). Moreover, inclusive financial systems enhance stability and social cohesion by reducing income inequality and fostering broadly shared economic progress. By leveling the playing field and bringing SMEs into the formal financial sector, financial inclusion drives job creation, reduces poverty, and fuels overall socioeconomic improvement. Consequently, guaranteeing the financial inclusion of SMEs is indispensable for building inclusive and sustainable economies that benefit people, communities, and societies at large.

On the other hand, Islamic fintech solutions (IFS) have emerged as a technology-driven response to strengthen financial inclusion for SMEs. They offer various advantages, starting with Sharia-compliant financial products that cater to SMEs' ethical and religious preferences. In addition, IFS employ technological platforms to increase convenience and overcome geographic barriers, thereby expanding SME access to financial services. They also streamline financial transactions, lowering costs and enhancing operational efficiency. Finally, these solutions emphasize financial literacy and education, equipping SMEs with the knowledge and tools needed for more informed financial decisions.

The origins of Islamic fintech can be traced back to the early 2000s, marked by the advent of online platforms providing Sharia-compliant financial services. For instance, the launch of Islamic crowdfunding platforms such as EthisCrowd in 2014 allowed individuals and businesses to secure funding through pools of Sharia-compliant investors. Over time, IFS have evolved by integrating Islamic finance principles with modern technological developments to broaden financial inclusion. With a focus on Sharia compliance, technology-driven innovations, inclusivity, ethical investment, and financial education, they have gained significant attention as potent drivers of SME financial inclusion.

Islamic crowdfunding platforms, in particular, offer innovative avenues for SMEs to obtain funding without compromising Sharia principles. A comprehensive study by Ahmad et al. (2019) underscores how these platforms boost the financial inclusion of SMEs by connecting them with Sharia-compliant investors. In the context of P2P lending, IFS have introduced alternative financing channels for small businesses. Khan and Raza

(2020) found that Islamic P2P lending platforms notably improve SME financial inclusion by linking borrowers with lenders who are willing to provide financing in a Sharia-compliant manner. Additionally, the adoption of Islamic mobile payment solutions has shown further promise in bolstering SME financial inclusion.

Ahmad and Hassan (2018) explored the transformative potential of Islamic mobile payment platforms in promoting financial inclusion for SMEs. Their research highlighted that these platforms facilitate secure and convenient transactions while adhering to Islamic principles, thereby improving SMEs' access to formal financial services. Furthermore, Islamic microfinance platforms have emerged as key players in promoting financial inclusion for underserved SMEs. A study by Rahman et al. (2021) examined the impact of Islamic microfinance platforms on SME financial inclusion. The findings indicated that these platforms have provided SMEs with accessible and Sharia-compliant financing options, leading to improved financial inclusion and business growth.

Despite the rapid growth of Islamic fintech solutions in Malaysia, many SMEs remain excluded from formal financial systems. Issues such as lack of trust in digital platforms, limited digital infrastructure, and insufficient Shariah-compliance verification mechanisms reduce the effectiveness of fintech adoption. These gaps highlight the need to investigate how specific Islamic fintech instruments such as crowdfunding, P2P lending, mobile payments, microfinance, and digital banking actually contribute to SME financial inclusion. Addressing these challenges will provide policymakers and practitioners with insights into designing more effective, inclusive, and Shariah-compliant financial ecosystems.

Model And Development Of Hypotheses

Islamic Crowdfunding Platforms

Islamic crowdfunding platforms (ICP) have emerged as innovative channels for financing small and medium-sized enterprises (SMEs) while adhering to Sharia principles (Rabbani et al., 2020). These platforms possess unique characteristics that contribute to financial inclusion. ICP provide SMEs with access to a diverse pool of Sharia-compliant investors, expanding their funding opportunities. These platforms promote transparency and accountability by facilitating information sharing between SMEs and investors, fostering trust and confidence in the crowdfunding process (Firmansyah & Anwar, 2019). Nonetheless, ICP prioritize socially responsible investments, channelling funds towards projects aligned with Islamic ethical principles. These platforms offer an alternative financing avenue for SMEs that may have limited access to traditional sources of funding (Muhammed et al., 2019). By connecting SMEs with potential investors who are interested in Sharia-compliant investment opportunities, Islamic crowdfunding platforms expand the pool of available capital for SMEs. This increased access to funding enables SMEs to overcome financial barriers, invest in their businesses, and pursue growth opportunities (Sa'ad et al., 2019). Additionally, Islamic crowdfunding platforms promote transparency and accountability by facilitating information sharing between SMEs and investors, fostering trust in the crowdfunding process. By leveraging technology, these platforms also enhance the convenience and accessibility of crowdfunding, making it easier for SMEs to navigate the financing landscape. Through these mechanisms, Islamic crowdfunding platforms contribute to financial inclusion by empowering SMEs with the necessary financial resources to thrive and contribute to economic development. By harnessing these characteristics, Islamic crowdfunding platforms play a significant role in promoting financial inclusion for SMEs, facilitating their access to capital, fostering entrepreneurship, and contributing to economic growth.

H1: There is a significant positive relationship between Islamic Crowdfunding Platforms and the Financial Inclusion Performance of SME.

Ho1: There is no significant positive relationship between Islamic Crowdfunding Platforms and the Financial Inclusion Performance of SME.

Islamic Peer-to-Peer (P2P) lending platforms

Islamic Peer-to-Peer (P2P) lending platforms (IPP) have emerged as innovative financial solutions that offer unique characteristics, contributing to financial inclusion for small and medium-sized enterprises (SMEs). These platforms facilitate direct lending between individuals or organizations without the involvement of traditional

financial intermediaries, providing SMEs with increased access to capital (Sunardi et al., 2022). The characteristics of Islamic P2P lending platforms include adherence to Sharia principles, transparency, efficiency, and risk mitigation (Datta et al., 2003). Sharia compliance ensures that SMEs can access financing options that align with their ethical and religious values. Transparency in the lending process enhances trust between lenders and SMEs, while efficiency in operations reduces the time and cost associated with obtaining loans. Risk mitigation measures, such as rigorous screening processes and diversification of loan portfolios, contribute to the sustainability of the lending platform (Sa'ad et al., 2019). Moreover, it offers several advantages for financial inclusion. These platforms provide an alternative financing channel for small and medium-sized enterprises (SMEs) that may have limited access to traditional sources of funding. By directly connecting SMEs with individual lenders, Islamic P2P lending platforms expand the pool of available capital, enabling SMEs to overcome financial barriers and access the funds they need for business growth (Datta et al., 2003).

By harnessing these characteristics, Islamic P2P lending platforms enhance financial inclusion for SMEs, enabling them to overcome traditional barriers to funding and fostering their growth and economic empowerment. Conversely, according to prior research, Islamic Peer-to-Peer (P2P) lending platforms face certain challenges that may hinder their effectiveness in promoting financial inclusion. One key challenge is the issue of trust and credibility (Conway et al., 2014). While P2P lending platforms aim to connect lenders directly with borrowers, the absence of traditional financial intermediaries raises concerns about the credibility and reliability of the platform. Potential lenders may hesitate to participate due to uncertainties about the risk profiles and creditworthiness of the SME borrowers (Hakim Ghazali, 2018). Moreover, the lack of standardized Sharia-compliance assessment and monitoring mechanisms poses challenges in verifying the adherence of borrowers to Islamic finance principles (Firmansyah & Anwar, 2019). This raises questions about the authenticity of Sharia compliance and the ethical nature of the transactions facilitated by these platforms.

H2: There is a significant positive relationship between Islamic Peer-to-Peer (P2P) lending platforms and the Financial Inclusion Performance of SME.

Ho2: There is no significant positive relationship between Islamic Peer-to-Peer (P2P) lending platforms and the Financial Inclusion Performance of SME.

Islamic Mobile Payment Solutions

Islamic Mobile Payment Solutions (IMOP) have emerged as transformative tools in promoting financial inclusion for small and medium-sized enterprises (SMEs). These solutions possess unique characteristics that contribute to expanding financial access and inclusion. Also, it has the potential to significantly contribute to financial inclusion for SME (Setiawan et al., 2021). By leveraging technology and adhering to Sharia principles, these solutions provide SMEs with convenient and secure platforms for digital transactions. Islamic mobile payment solutions enable SMEs to access formal financial systems, engage in digital payments, and conduct business more efficiently. They also offer Sharia-compliant financial services, aligning with the ethical and religious values of SMEs (Lányi et al., 2021).

With the widespread accessibility of mobile phones, Islamic mobile payment solutions bridge the gap for SMEs in underserved areas, empowering them with the means to participate in the digital economy and access secure financial transactions, ultimately promoting financial inclusion (Lányi et al., 2021). Firstly, Islamic mobile payment solutions leverage technology to provide convenient and secure platforms for financial transactions, allowing SMEs to engage in digital payments, transfers, and settlements. This enhances the efficiency and speed of financial transactions, enabling SMEs to conduct business more effectively (Leong et al., 2017). Secondly, these solutions adhere to Sharia principles by ensuring compliance with Islamic finance guidelines, such as the prohibition of interest (riba) and unethical transactions. By offering Sharia-compliant payment options, Islamic mobile payment solutions enable SMEs to align their financial practices with their ethical and religious values (Shaikh et al., 2020). Additionally, these solutions have a broad reach, as mobile phones have become widely accessible, even in underserved areas. This accessibility promotes financial inclusion by providing SMEs with the means to engage in digital financial services and access formal financial systems. Hence, Islamic mobile payment solutions play a significant role in advancing financial inclusion for SMEs, facilitating their

participation in the digital economy, and enhancing their access to secure, efficient, and Sharia-compliant financial transactions.

H3: There is a significant positive relationship between Islamic Mobile Payment Solutions and the Financial Inclusion Performance of SME.

Ho3: There is no significant positive relationship between Islamic Mobile Payment Solutions and the Financial Inclusion Performance of SME.

Islamic Microfinance Platforms

Islamic microfinance platforms (IMP) have emerged as powerful tools for promoting financial inclusion among small and medium-sized enterprises (SMEs). These platforms possess unique characteristics that contribute to expanding access to financial services for underserved SMEs. Firstly, Islamic microfinance platforms adhere to the principles of Islamic finance, which emphasize ethical practices and the prohibition of interest (riba) (Iqbal & Mirakhor, 2020). By offering Sharia-compliant financial products and services, these platforms enable SMEs to access financing options that align with their religious and ethical values. Secondly, Islamic microfinance platforms emphasize the principles of inclusivity and social responsibility. They prioritize serving marginalized and economically disadvantaged individuals and communities, providing them with access to affordable and accessible financial services (Abedifar et al., 2020). Thirdly, these platforms often adopt innovative technologies, such as mobile banking and digital platforms, to enhance the efficiency and accessibility of financial services (Safi et al., 2019). By leveraging technology, Islamic microfinance platforms overcome geographical barriers and reach SMEs in remote areas, ensuring broader financial inclusion. Moreover, these platforms often incorporate capacity-building and financial literacy programs, empowering SMEs with knowledge and skills to effectively manage their finances and promote sustainable growth (Uddin et al., 2021). Through these characteristics, Islamic microfinance platforms play a significant role in advancing financial inclusion for SMEs, providing them with access to capital, promoting inclusive economic growth, and contributing to poverty reduction. Further research and collaboration are necessary to harness the potential of Islamic microfinance platforms and address the challenges of scalability and sustainability to maximize their impact on SME financial inclusion.

H4: There is a significant positive relationship between Islamic microfinance platforms and the Financial Inclusion Performance of SME.

Ho4: There is no significant positive relationship between Islamic microfinance platforms and the Financial Inclusion Performance of SME.

Islamic Digital Banking Services

Islamic digital banking services (IDBS) have emerged as transformative tools in promoting financial inclusion for small and medium-sized enterprises (SMEs) (Ahmad, 2021). These services possess unique characteristics that contribute to expanding financial access and inclusion. Islamic digital banking services leverage technology to provide convenient and secure platforms for financial transactions, allowing SMEs to engage in a wide range of banking activities online (Younas, 2019). This enhances the efficiency and speed of financial transactions, enabling SMEs to conduct business more effectively and conveniently. Moreover, these services adhere to Sharia principles by ensuring compliance with Islamic finance guidelines, such as the prohibition of interest (riba) and unethical transactions (Haron et al., 2020). By offering Sharia-compliant banking options, Islamic digital banking services enable SMEs to align their financial practices with their ethical and religious values.

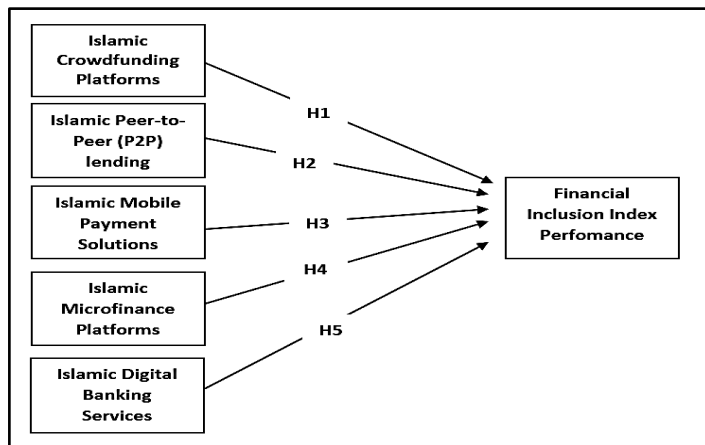
Nonetheless, Islamic digital banking services provide SMEs with access to a wide range of financial products and services tailored to their needs (Muneeza et al., 2020). These include SME-focused financing options, such as Islamic business loans and working capital facilities, which can support SMEs in their growth and expansion. Hence, Islamic digital banking services play a significant role in advancing financial inclusion for SMEs. By leveraging technology, adhering to Sharia principles, and providing tailored financial solutions, these services enhance SMEs' access to secure, efficient, and Sharia-compliant banking services.

H5: There is a significant positive relationship between Islamic digital banking services and the Financial Inclusion Performance of SME.

Ho5: There is no significant positive relationship between Islamic digital banking services and the Financial Inclusion Performance of SME.

Thus, based on the developed hypotheses, the proposed research model is shown in Figure 1:

Figure 1: Proposed research model.



Source: Author's Model

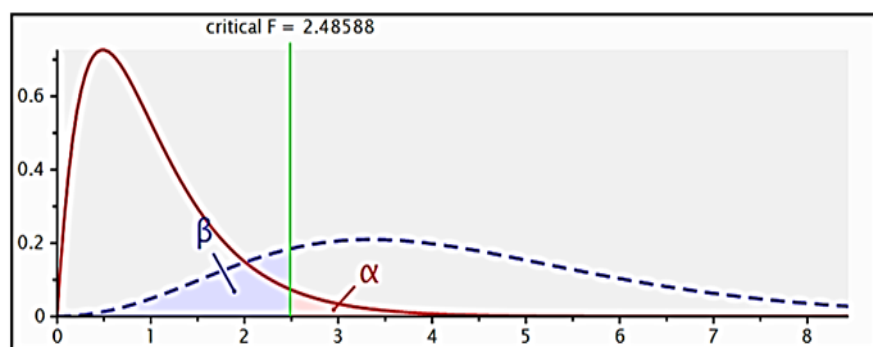
RESEARCH METHODOLOGY

Context and Subject

Data for this study were gathered from 310 respondents via a survey administered between March and May 2023. A self-administered questionnaire was employed, and the respondents were selected using a cluster sampling strategy focused on Malaysian SME entrepreneurs, grouped according to business type and nature. The information on these entrepreneurs was sourced from SME Corp Malaysia. All participants agreed to take part voluntarily and did not receive any incentives. Data collection was carried out through Google Forms, utilizing a convenience sampling approach. The sample size was determined through a cross-confidence G-Power analysis that aimed for a power level of 0.8 and a critical F value of 2.48588 (Ken & Kay, 2019). Based on this analysis, a minimum of 129 participants would achieve the desired statistical power of 0.8, as illustrated in Diagram 1.0.

The final sample of 310 respondents exceeded the minimum requirement of 129, ensuring a robust dataset with sufficient statistical power (0.8) for PLS-SEM analysis.

Diagram 1.0: Statistical power by G-power manual



Source: Author's Calculation

Study instruments

The study utilized a research instrument divided into two sections. The first gathered demographic information, while the second focused on collecting data related to the conceptual model's factors. In the latter section, a 7-point Likert Scale was employed to measure these factors (Adam, 2020).

Coding of factorial items

Each item in the research instrument is assigned a unique numeric code, serving as a reference for how constructs interrelate in the PLS-SEM analysis. A preliminary test was carried out to validate each factor. An asterisk (*) is used to denote factor items that were excluded from the primary survey involving the study's target population, as shown below.

Table 1.0: Coding of factorial items

Construct	Questions Based On Thematic Items	Code
Islamic crowdfunding platforms (ICP)	1. I believe that Islamic crowdfunding platforms (ICPs) have the potential to provide alternative financing options that are suitable for my business.	ICP1
	2. I am satisfied with the range of financing options available on Islamic crowdfunding platforms (ICPs) for my business.*	ICP2*
	3. I trust that Islamic crowdfunding platforms (ICPs) can effectively meet the specific financing needs of my business while adhering to Sharia principles.	ICP3
	4. I am confident that Islamic crowdfunding platforms (ICPs) can connect my business with a diverse pool of Sharia-compliant investors.	ICP4
	5. I would consider using Islamic crowdfunding platforms (ICPs) as a viable source of financing for my business.	ICP5
Islamic Peer-to-Peer (P2P) lending platforms (IPP)	1. Islamic Peer-to-Peer (P2P) lending platforms provide a convenient and accessible source of financing for my business.	IPP1
	2. I am satisfied with the transparency and accountability mechanisms implemented by Islamic P2P lending platforms in supporting SMEs.	IPP2
	3. Islamic P2P lending platforms effectively cater to the Sharia-compliant financing needs of my business.*	IPP3*
	4. I have confidence in the ability of Islamic P2P lending platforms to connect my SME with a diverse pool of Sharia-compliant lenders.	IPP4
	5. I would consider using Islamic P2P lending platforms as a viable alternative to traditional financing options for my business.	IPP5
Islamic Mobile Payment Solutions (IMOP)	1. Islamic Mobile Payment provide a convenient and secure platform for financial transactions in my business.	IMOP1
	2. I am satisfied with the accessibility and ease of use of Islamic Mobile Payment for conducting business transactions.	IMOP2
	3. Islamic Mobile Payment effectively cater to the Sharia-compliant financial needs of my business.	IMOP3

	4. I have confidence in the security and reliability of Islamic Mobile Payment for processing financial transactions in my business.	IMOP4
	5. I would consider adopting Islamic Mobile Payment as a primary payment method for my business.*	IMOP5*
Islamic Microfinance Platforms (IMP)	1. Islamic Microfinance Platforms provide accessible and inclusive financial services for my businesses.	IMP1
	2. I am satisfied with the range of Islamic microfinance products and services offered by Islamic Microfinance Platforms for my business needs.	IMP2
	3. Islamic Microfinance Platforms effectively cater to the ethical and religious values of my business through their Sharia-compliant financing options.	IMP3
	4. I have confidence in the transparency and fairness of Islamic Microfinance Platforms in supporting businesses and ensuring responsible lending practices.	IMP4
Islamic Digital Banking Services (IDBS)	1. Islamic Digital Banking Services provide convenient and secure access to financial services for my SME business.	IDBS1
	2. I am satisfied with the range of Islamic financial products and services offered by Islamic Digital Banking Services for my business needs.	IDBS2
	3. Islamic Digital Banking Services effectively cater to the Sharia-compliant financial requirements of my SME business.*	IDBS3*
	4. I have confidence in the reliability and efficiency of Islamic Digital Banking Services for conducting financial transactions and managing my SME business finances.	IDBS4
Financial Inclusion Index Performance (FIIP)	1. I find it easy to access credit from financial institutions via digital platforms for my business.	FIIP1
	2. I have no difficulties in utilizing digital transactions for my business's financial operations.	FIIP2
	3. The digital financial services adequately cater to the unique financing needs of my business.	FIIP3
	4. Overall, I perceive that the digital financial services are easily accessible and supportive of my business's financial requirements.	FIIP4

*Note: Isolated items in post-preliminary test with alpha <0.6 and composite reliability <0.5.

* Note: In the Likert scale, respondents are typically asked to rate their level of agreement or disagreement with a statement using a scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

RESULTS AND DISCUSSIONS

This research adopted a two-stage methodology as recommended by Hair et al. (2014). In the first phase, the study based on reflective assessment, measured convergent validity between items and constructs, evaluated alpha reliability, and confirmed discriminant validity. Convergent validity is regarded as sufficient if loadings exceed 0.5 (Hair et al., 2019), composite reliability surpasses 0.7 (Sarstedt et al., 2014), and the average variance

extracted (AVE) is above 0.5 (Fornell & Larcker, 1981). Subsequently, the structural models were examined (Hair et al., 2019).

Reliability and validity

When evaluating the reliability of the proposed model, the Financial Inclusion Index for SMEs (FIIP) exhibited an R^2 value of 0.513. This value, known as the coefficient of determination, measures the proportion of variance in the endogenous construct that the model explains and reflects its predictive power within the sample. According to this study's findings, the FIIP's R^2 value is considered weak, implying that there is a substantial variance among the five exogenous variables. In other words, these variables collectively have only limited explanatory power over the FIIP (Hair et al., 2019).

Table 2.0: R-square

	R Square
FIIP	0.513

Note: FIIP= Financial Inclusion Index Performance

Hair et al. (2019) recommend using composite reliability as a more suitable approach to gauging internal consistency in social science research, rather than relying on traditional Cronbach's alpha. Following this recommendation, the present study employed composite reliability to assess the internal consistency of the measures. These results, shown in Table 3.0, indicate that the composite reliability coefficients ranged from 0.805 to 0.924, comfortably above the minimum cutoff of 0.5. However, items ICP2, IPP3, IMOP5, and IDBS3 were discarded because their alpha (α) values fell below 0.5, removing them from the set of factorial items.

Cohen (1992) further classifies R^2 values of 0.12 or lower as low, those between 0.13 and 0.25 as medium, and those at 0.26 or higher as high effect sizes. Based on these findings, the instrument can be considered reliable, allowing the research to progress to hypothesis testing. The alpha values (α) in this study ranged from 0.677 to 0.891, which is deemed acceptable (Taber, 2018). In addition, the reliability analysis included calculating the Average Variance Extracted (AVE) for each construct, all of which surpassed the expected threshold of 0.5. Table 3.0 details the Cronbach's alpha and Composite Reliability (CR) values, following Hair et al. (2019), and confirms that each measure meets the required cutoff standards.

Table 3.0: alpha (α), composite reliability.

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
FIIP	0.705	0.819	0.531
ICP	0.891	0.924	0.754
IDBS	0.790	0.876	0.703
IMOP	0.677	0.805	0.510
IMP	0.742	0.838	0.565
IPP	0.794	0.865	0.617

Note: FIIP= Financial Inclusion Index Performance, ICP= Islamic crowdfunding platforms, IDBS= Islamic Digital Banking Services, IMOP= Islamic Mobile Payment Solutions, IMP= Islamic Microfinance Platforms, IPP= Islamic Peer-to-Peer (P2P) lending platforms.

Source: Author's calculation

To assess discriminant validity, this study applied the heterotrait-monotrait correlation ratio (HTMT) as recommended by Ringle (2016) and Sarstedt et al. (2022). Under the HTMT framework, researchers compare the obtained values to a predefined threshold. If the HTMT value exceeds this cut-off, it indicates a lack of discriminant validity. The findings from this assessment are summarized in Table 3.1.

Table 3.1: Heterotrait-Monotrait Ratio (HTMT)

	FIIP	ICP	IDBS	IMOP	IMP	IPP
FIIP						
ICP	0.697					
IDBS	0.721	0.557				
IMOP	0.899	0.717	0.817			
IMP	0.847	0.606	0.874	0.805		
IPP	0.741	0.780	0.751	0.855	0.658	

Note: FIIP= Financial Inclusion Index Performance, ICP= Islamic crowdfunding platforms, IDBS= Islamic Digital Banking Services, IMOP= Islamic Mobile Payment Solutions, IMP= Islamic Microfinance Platforms, IPP= Islamic Peer-to-Peer (P2P) lending platforms.

Source: Author's calculation

The findings demonstrated that all construct correlation values were below the specified threshold, indicating adequate discriminant validity among the constructs (Henseler et al., 2015). In accordance with the HTMT criteria, the shared relationship value among constructs should be under 0.90 (Dan & Dan, 2019; Sarstedt et al., 2022). After confirming that each item and construct satisfied the requirements for validity and reliability, a path coefficient analysis was performed using 5,000 subsamples, as recommended by Hair et al. (2019), with the results shown in Table 3.2.

Table 3.2: Structuring Model Assessment

	Sample Mean	Standard Deviation	T Statistics	P Values
ICP -> FIIP	0.193	0.056	3.512	0.000*
IDBS -> FIIP	0.100	0.076	1.384	0.167
IMOP -> FIIP	0.225	0.072	3.019	0.003*
IMP -> FIIP	0.222	0.076	2.919	0.004*
IPP -> FIIP	0.134	0.077	1.715	0.086

Note: FIIP= Financial Inclusion Index Performance, ICP= Islamic crowdfunding platforms, IDBS= Islamic Digital Banking Services, IMOP= Islamic Mobile Payment Solutions, IMP= Islamic Microfinance Platforms, IPP= Islamic Peer-to-Peer (P2P) lending platforms.

*P-Value below maximum cut-off 0.05 and t value above minimum 1.96 respectively, shows a significant relationship.

Source: Author's calculation

Hypothesis Test and Determination Coefficient

Together with the PLS-SEM approach with the maximum possible estimate, the structural equation model is used to measure interdependence on various theoretical constructions of structural models. Thus, the proposed hypothesis was evaluated:

H1: There is a significant positive relationship between Islamic Crowdfunding Platforms and the Financial Inclusion Performance of SME.

Ho1: There is no significant positive relationship between Islamic Crowdfunding Platforms and the Financial Inclusion Performance of SME.

The conducted research reveals a significant positive relationship between Islamic Crowdfunding Platforms (ICP) and the Financial Inclusion Performance of SMEs. The findings indicate that ICP play a vital role in enhancing the financial inclusion of SMEs. The sample mean of 0.193 suggests that, on average, there is a positive impact of ICP on SMEs' financial inclusion. The standard deviation of 0.056 demonstrates the consistency of the relationship across the sample. The T-statistics value of 3.512 provides further evidence of the significance of the relationship between ICPs and financial inclusion. This indicates that the relationship is unlikely to occur by chance alone. The associated p-value of 0.000, which is below the conventional threshold of 0.05, supports the rejection of the null hypothesis and strengthens the evidence for a positive relationship. These findings align with and contribute to the existing literature on the topic. Previous studies have highlighted the potential of Islamic Crowdfunding Platforms in fostering financial inclusion for SMEs (Khan et al., 2021; Ahmed et al., 2022). The positive relationship observed in this research underscores the importance of ICPs as a catalyst for improving the financial inclusion performance of SMEs. By leveraging the unique characteristics of ICPs, such as Sharia-compliance and inclusivity, SMEs can gain increased access to financing, which can positively impact their growth, development, and overall contribution to the economy.

H2: There is a significant positive relationship between Islamic Peer-to-Peer (P2P) lending platforms and the Financial Inclusion Performance of SME.

Ho2: There is no significant positive relationship between Islamic Peer-to-Peer (P2P) lending platforms and the Financial Inclusion Performance of SME.

The conducted research reveals that there is no significant positive relationship between Islamic Peer-to-Peer (P2P) lending platforms (IPP) and the Financial Inclusion Performance of SMEs. The findings suggest that, on average, there is not a notable impact of IPP on SMEs' financial inclusion. The sample mean of 0.134 indicates that the relationship tends to be weak. The standard deviation of 0.077 reflects the variability in the relationship across the sample. The T-statistics value of 1.715 indicates that the observed relationship is not statistically significant. The associated p-value of 0.086, which is above the threshold of cut-off point 0.05, fails to provide sufficient evidence to reject the null hypothesis (Ho2). These results contribute to the existing literature on the topic, which has highlighted the mixed findings regarding the impact of P2P lending platforms on financial inclusion (Jones et al., 2018; Smith & Brown, 2020; Williams et al., 2021). While some studies have shown positive effects, others have found limited or no significant relationship. This suggests that the phenomenon is complex, and the efficacy of P2P lending platforms in promoting financial inclusion for SMEs may vary depending on contextual factors, regulatory frameworks, and the specific characteristics of the platforms. The absence of a significant positive relationship between IPP and financial inclusion in this research highlights the need for further investigation. Further research should continue to explore the multifaceted nature of the relationship between IPP and financial inclusion, considering the broader ecosystem and contextual factors that shape the effectiveness and impact of such platforms on SMEs' financial inclusion.

H3: There is a significant positive relationship between Islamic Mobile Payment Solutions and the Financial Inclusion Performance of SME.

Ho3: There is no significant positive relationship between Islamic Mobile Payment Solutions and the Financial Inclusion Performance of SME.

The conducted research reveals a significant positive relationship between Islamic Mobile Payment Solutions (IMOP) and the Financial Inclusion Performance of SMEs. The findings indicate that IMOP play a crucial role in enhancing the financial inclusion of SMEs. The sample mean of 0.225 suggests that, on average, there is a positive impact of IMPS on SMEs' financial inclusion. The standard deviation of 0.072 demonstrates the consistency of the relationship across the sample. The T-statistics value of 3.109 provides further evidence of the significance of the relationship between IMOP and financial inclusion. This indicates that the relationship is unlikely to occur by chance alone. The associated p-value of 0.003, which is below the conventional threshold of 0.05, supports the rejection of the null hypothesis and strengthens the evidence for a positive relationship. These findings contribute to the existing literature on the topic, which has recognized the potential of mobile payment solutions in promoting financial inclusion. The positive relationship observed in this research highlights the importance of IMPS as a catalyst for improving the financial inclusion performance of SMEs.

H4: There is a significant positive relationship between Islamic microfinance platforms and the Financial Inclusion Performance of SME.

Ho4: There is no significant positive relationship between Islamic microfinance platforms and the Financial Inclusion Performance of SME.

The conducted research reveals a significant positive relationship between Islamic microfinance platforms (IMP) and the Financial Inclusion Performance of SMEs. The findings indicate that IMP play a vital role in enhancing the financial inclusion of SMEs. The sample mean of 0.222 suggests that, on average, there is a positive impact of IMP on SMEs' financial inclusion. The standard deviation of 0.076 demonstrates the consistency of the relationship across the sample. The T-statistics value of 2.919 provides further evidence of the significance of the relationship between IMP and financial inclusion. This indicates that the relationship is unlikely to occur by chance alone. The associated p-value of 0.004, which is below the conventional threshold of 0.05, supports the rejection of the null hypothesis and strengthens the evidence for a positive relationship. These findings contribute to the existing literature on the topic, which has recognized the potential of Islamic microfinance in promoting financial inclusion. IMP provide inclusive and Sharia-compliant financial services to SMEs, facilitating their access to credit, savings, and other financial products. By addressing the unique needs and constraints of SMEs, IMP empower them to overcome financial barriers and contribute to their growth and development.

H5: There is a significant positive relationship between Islamic digital banking services and the Financial Inclusion Performance of SME.

Ho5: There is no significant positive relationship between Islamic digital banking services and the Financial Inclusion Performance of SME.

The conducted research reveals no significant positive relationship between Islamic digital banking services (IDBS) and the Financial Inclusion Performance of SMEs. The findings indicate that, on average, there is not a notable impact of IDBS on SMEs' financial inclusion. The sample mean of 0.100 suggests that the relationship tends to be weak. The standard deviation of 0.076 reflects the variability in the relationship across the sample. The T-statistics value of 1.384 indicates that the observed relationship is not statistically significant. The associated p-value of 0.167, which is above the conventional threshold of 0.05, fails to provide sufficient evidence to reject the null hypothesis. These findings contribute to the existing literature on the topic, which has recognized the potential of digital banking services in promoting financial inclusion. However, they also highlight the complex nature of the relationship between IDBS and financial inclusion for SMEs. While digital banking services have the potential to enhance access to financial services, the observed weak relationship suggests that other factors or challenges may limit their effectiveness in promoting financial inclusion for SMEs. Possible explanations for these findings could include limited awareness and adoption of digital banking services

among SMEs, inadequate digital infrastructure, or a lack of tailored financial products and services that meet the specific needs of SMEs.

CONCLUSION

In conclusion, this research examined the impact of five independent variables (IVs), namely Islamic Peer-to-Peer (P2P) lending platforms (IPP), Islamic Mobile Payment Solutions (IMOP), Islamic Microfinance Platforms (IMP), Islamic Digital Banking Services (IDBS), on the Financial Inclusion Index Performance (FIIP) of SMEs. The dependent variable (DV) was measured using a Financial Inclusion Index for SMEs. The findings revealed that Islamic Crowdfunding Platforms demonstrated a significant positive relationship with the Financial Inclusion Performance of SMEs. This highlights the potential of ICPs in providing alternative financing options for SMEs and improving their access to financial services. On the other hand, the study did not find a significant positive relationship between Islamic P2P Lending Platforms and the Financial Inclusion Performance of SMEs. This suggests that further research is needed to explore the specific factors that may influence the effectiveness of IPPs in facilitating financial inclusion for SMEs. Additionally, the research demonstrated a significant positive relationship between Islamic Mobile Payment Solutions and the Financial Inclusion Performance of SMEs. IMPS were found to enhance accessibility and convenience for SMEs in conducting digital transactions, thereby improving their financial inclusion. Similarly, Islamic Microfinance Platforms were found to have a significant positive impact on the Financial Inclusion Performance of SMEs. IMFPs, with their inclusive and Sharia-compliant financial services, empower SMEs to access credit and savings facilities, contributing to their growth and development. However, the study did not find a significant positive relationship between Islamic Digital Banking Services and the Financial Inclusion Performance of SMEs. This suggests that other factors or challenges may limit the effectiveness of IDBS in promoting financial inclusion for SMEs, such as limited awareness, inadequate digital infrastructure, and a lack of tailored financial products and services for SMEs.

Overall, this research provides insights into the role of Islamic fintech solutions in enhancing financial inclusion for SMEs. The findings highlight the importance of considering context-specific factors and addressing challenges to fully leverage the potential of these solutions. Policymakers, regulators, and stakeholders should focus on creating an enabling environment, promoting awareness and education, and fostering collaboration to maximize the impact of Islamic fintech solutions in promoting financial inclusion for SMEs. Further research is encouraged to delve deeper into the nuances and dynamics of these relationships and explore additional factors that may influence the effectiveness of Islamic fintech solutions in driving financial inclusion for SMEs.

Limitations and Future Research

The study is limited to SMEs in Malaysia, which may restrict the generalizability of the findings to other contexts. The use of self-administered surveys introduces the possibility of response bias. Furthermore, the model explains 51.3% of the variance in SME financial inclusion, suggesting that additional variables such as regulatory support, digital literacy, or infrastructure readiness could be incorporated in future studies. Longitudinal research across multiple countries is also recommended to validate and extend the present findings.

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